Presented to:

2009 U.S. Army Corrosion Summit

Engineering Support / Corrosion Prevention & Control Evaluation

TECHNOLOGY DRIVEN. **WARFIGHTER FOCUSED.**

February 5, 2009

Presented by:

Don R. Duran

Aviation and Missile Research, Development and Engineering Center

Report Documentation Page

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OMB No. 0704-0188

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2009 U.S. Army Corrosion Summit, 3-5 Feb, Clearwater Beach, FL

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Our Services

- Aircraft Corrosion
  - Corrosion Prevention & Control Evaluation
  - 3D Mapping
  - Pressure Washing
- Engineering Support
  - Maintenance Engineering Calls
  - Maintenance Engineering Order
  - Corrosion Prevention Techniques
  - ACE/Corrosion website

AH-64 A/D

Aircraft Corrosion

CH-47 D/F

UH-60 A/L/M

OH-58 D

Corrosion Prevention & Control Evaluation

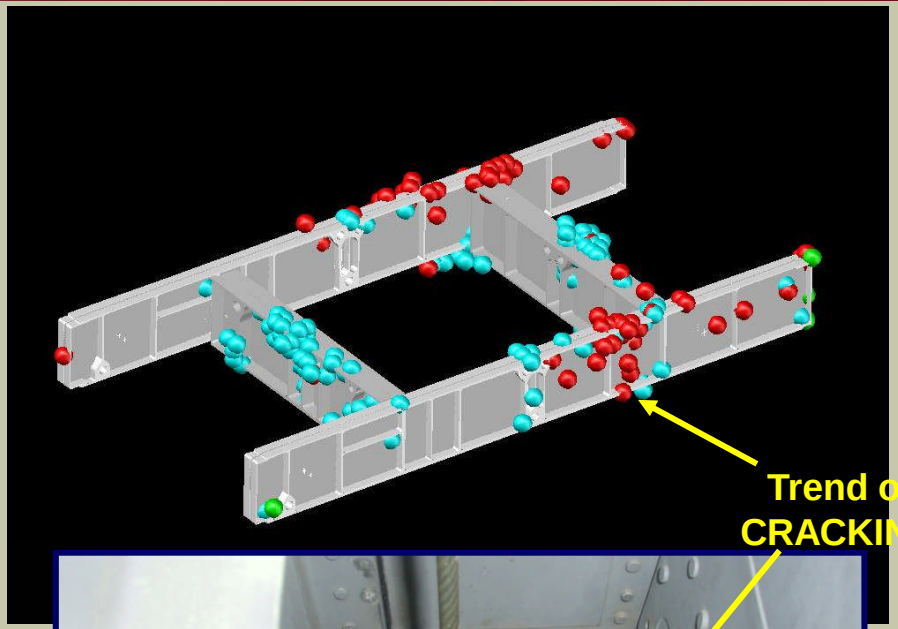
- CPCE is performed concurrently with the Airframe Condition Evaluation (ACE)
- The evaluation collects environmental, operational, and maintenance data
- These variables enable Maintenance Engineering Division (MED) to develop corrosion prevention measures for Army-wide implementation

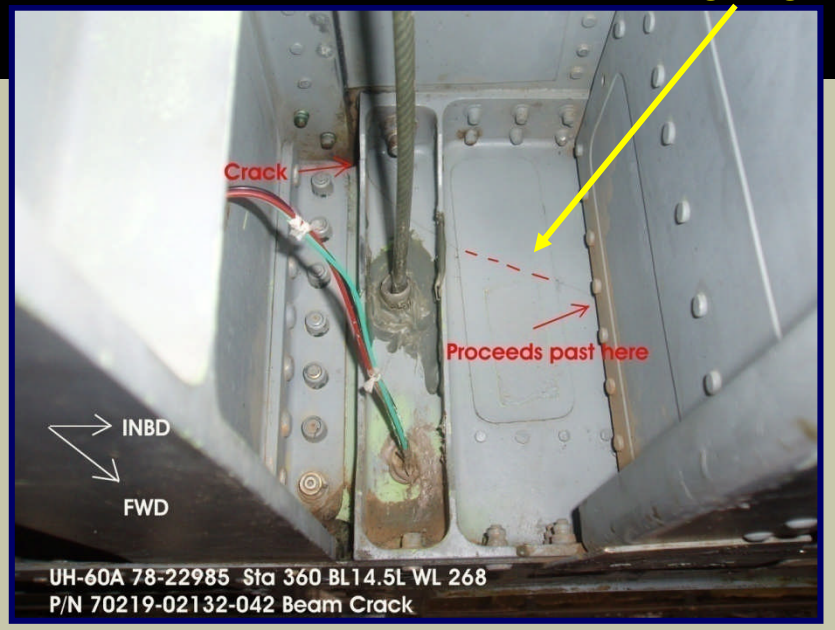
CPCE: In The Field

- Trained ACE evaluators examine aircraft using Technical Bulletins developed for each platform
- Evaluators document defects of indicators for each aircraft with location positioning F.S., W.L., B.L.
- Discrepancy Data gathered in field, compiled in ACE Database, and evaluated by the MED

3-D Mapping

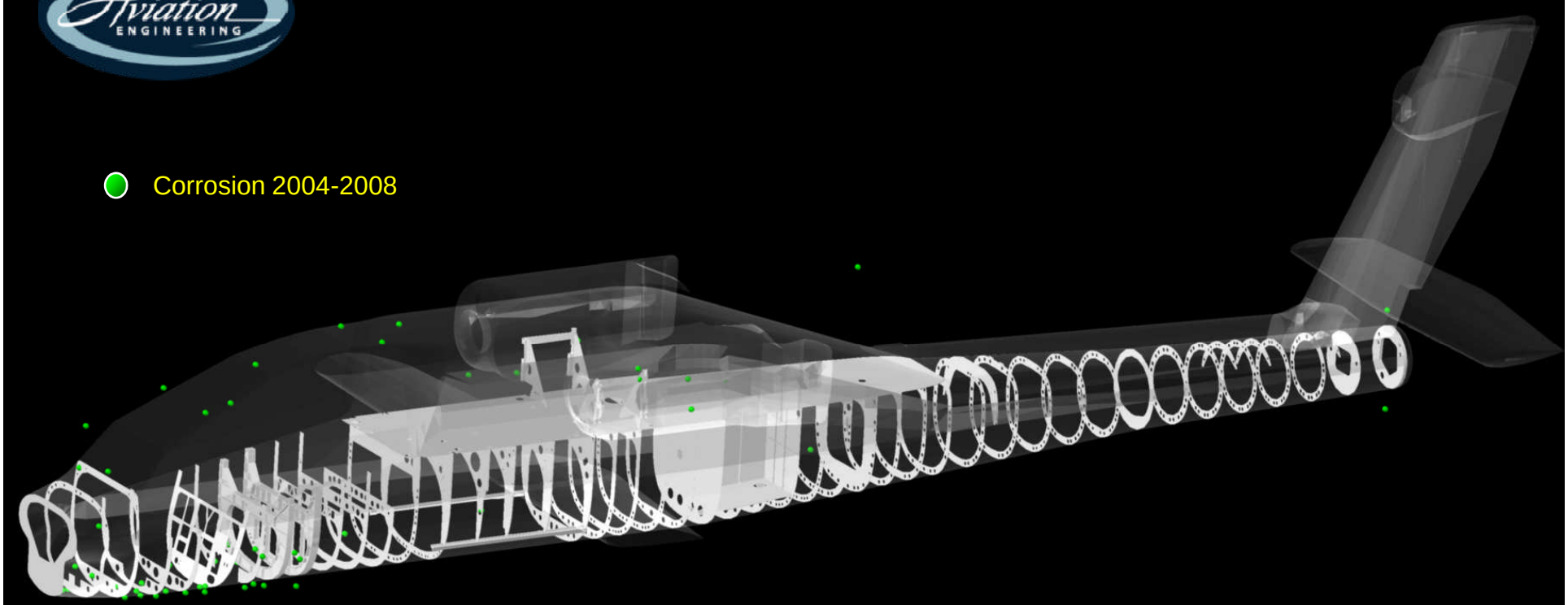
- Quick visual reference of defects identified during evaluations
- Provides historical data for long-term trend analysis
- User defined queries allow for detailed analysis





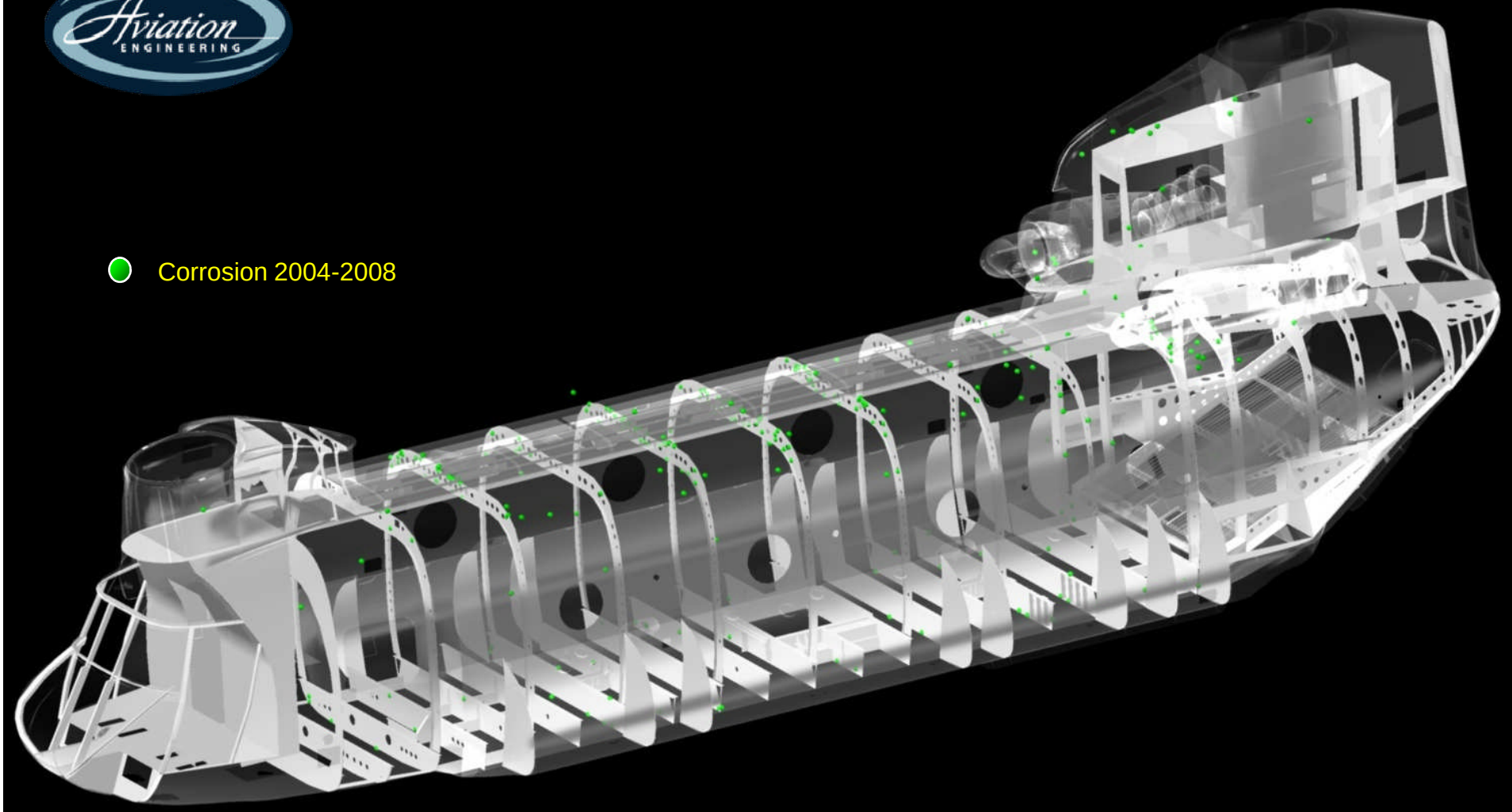
AH-64 Corrosion

- Corrosion 2004-2008



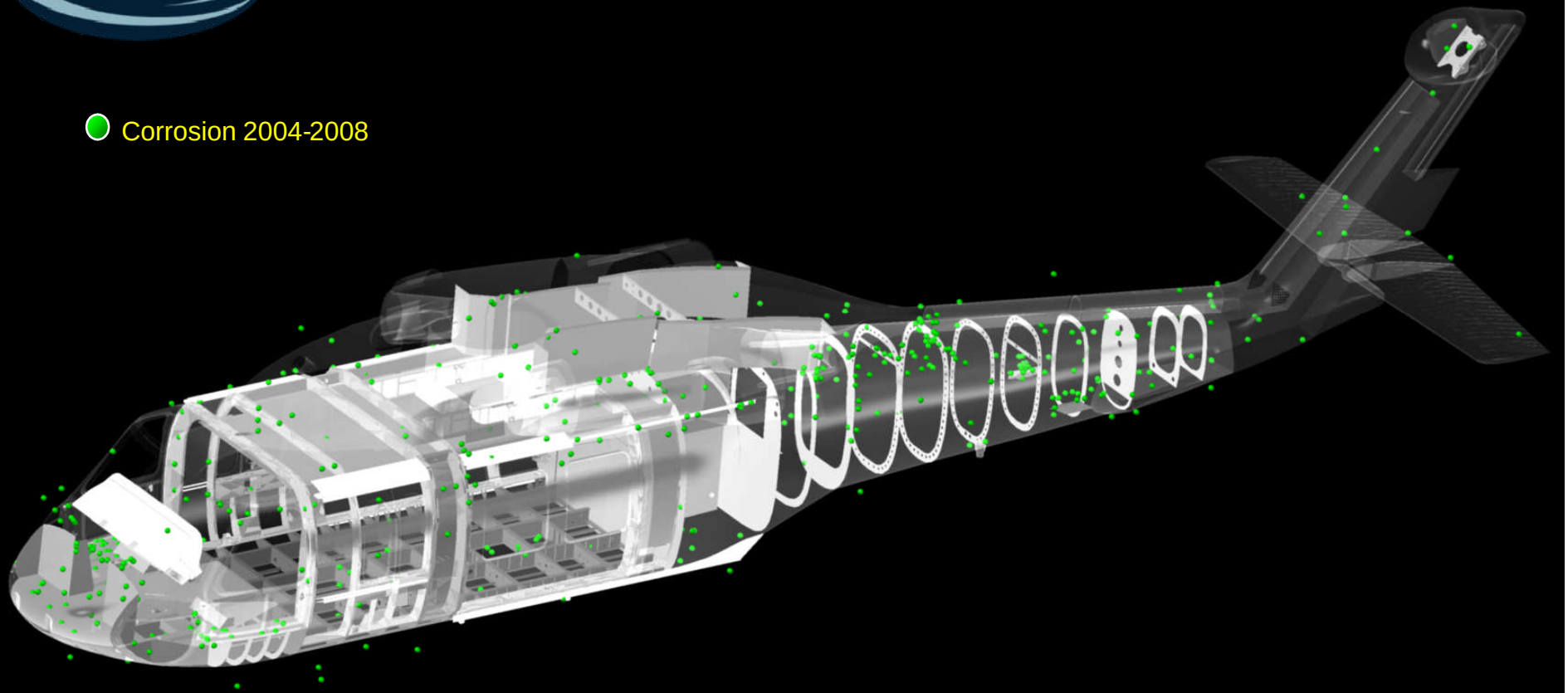
CH-47 Corrosion

- Corrosion 2004-2008



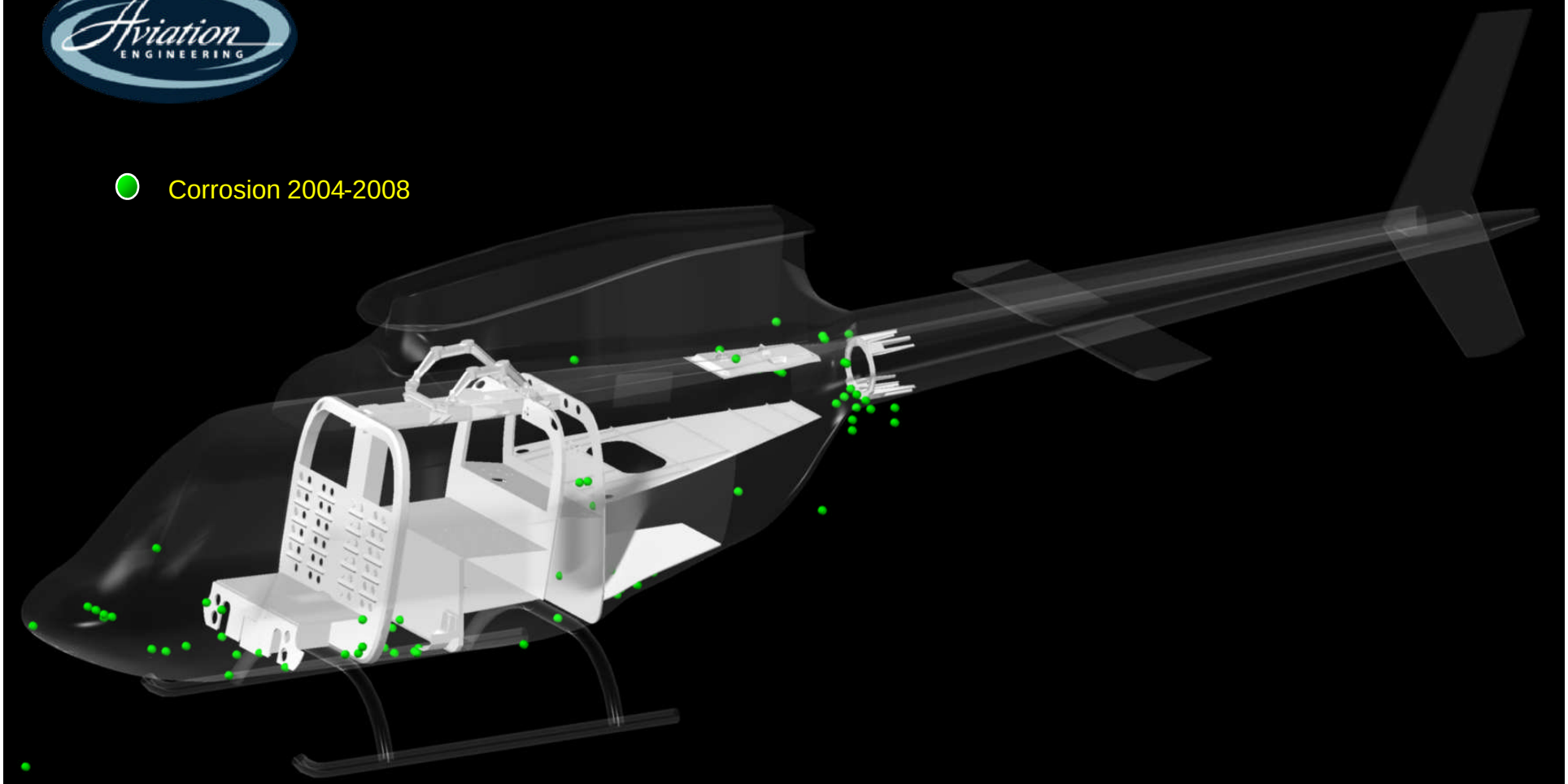
UH-60 Corrosion

- Corrosion 2004-2008

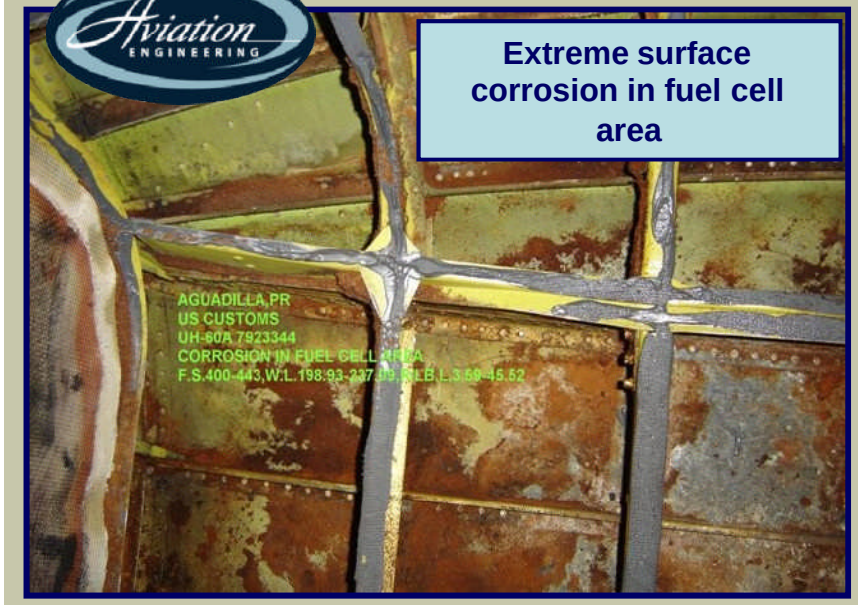


OH-58 Corrosion

- Corrosion 2004-2008



Corrosion Prevention



Corrosion can be prevented by:

1. Education: Corrosion training
2. Performing required maintenance inspections to identify corrosion
3. Performing good maintenance practices: use TMs, protect working surfaces, wash and clean on schedule
4. Using QPL approved cleaners and Corrosion Preventive Compounds (CPC)

Pressure Washing

Gen-MIM-2005-005 &TM 1-1500-344-23:

1. Use of Foam Cleaning methods
2. Maximum of 175 PSI w/ fixed, flat, wide-angle nozzles (> 30 Degrees), 12 inches from surface
3. Rinse at an angle between 15 and 30 degrees
4. High pressure causes:
   - Removes and damages paints and sealants
   - Forces water into seals
   - Structural damage to joints/honeycomb/thin structures.
   - Water intrusion into electronic components

AH-64 A/D

CH-47 D/F

UH-60 A/L/M

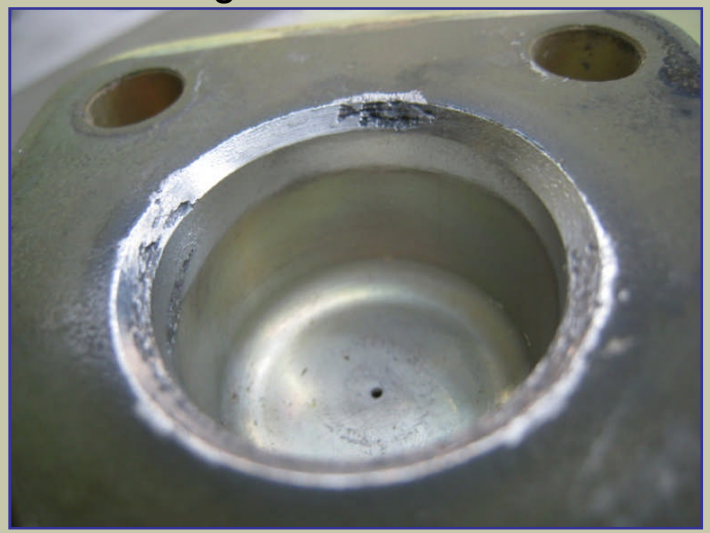
OH-58 D

Maintenance Engineer Call

- MEC: Are initiated by depot or field maintenance personnel requesting AMRDEC engineering support
- Typical requests are for deviations, special repairs, and to resolve DMWR inadequacies
- Engineering dispositions include clarifications, one time deviations, or short term deviations for depot programs (< 30 days)

OH-58 XMSN Strap

AH-64 Engine Mount



Maintenance Engineer Order

- MEO: These engineering documents are issued to enact permanent changes to AMCOM Depot Maintenance Work Requirements (DMWRs) or Technical Manuals (TMs)

MAINTENANCE ENGINEERING ORDER
(AMCOM Reg 750-11)

MEO NO. C4697
DATE DEC 05 2003 PAGE 1 of 1

TITLE
CH-47 Cruise Guide Indicator, P/N 114VS805-3 and 114VS805-4

TOLERANCES
Unless otherwise noted, dimensions are in inches and tolerances are:
Fractional ..... +/- 1/32
Decimal ..... +/- .010
Angular ..... +/- 1/2 degrees

APPLICABILITY
INTERIM USE OF THIS MEO IS AUTHORIZED FOR DEPOT MAINTENANCE UNTIL AFFECTED DOCUMENT IS UPDATED.

CSI Critical Characteristic — YES ☒ NO ☐

REFERENCES FOR RDECOM USE ONLY — DATE

DOCUMENT(S) AFFECTED
DMWR 55-6610-393, Dtd 15 Apr 1990

DOCUMENT CHANGE IS REQUIRED

	CH-47 DAA	
	Project 28479C	12/5/2003

PURPOSE OR PROBLEM
Correction to IPB text.

PROJECT ENGINEER
Humberto Hernandez, Jr.

ENGINEERING REVIEW

ENGINEERING RELEASE
Humberto Hernandez, Jr.

PUBLICATION CHANGE REQUEST: REQUEST THAT THE FOLLOWING DATA BE INCLUDED IN THE NEXT CHANGE OR REVISION TO THE PUBLICATION IDENTIFIED ABOVE.

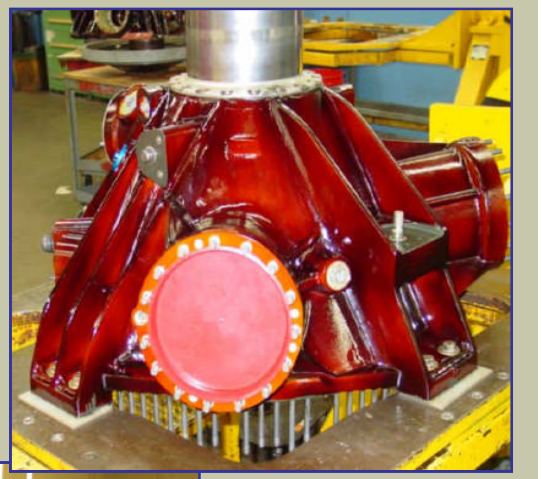
ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.	FIGURE NO.	TABLE NO.	CHANGES (EXACT WORDING OF CHANGE MUST BE GIVEN)
	4-7.			4-1.		CHANGE the Part Number for Item # 25, Movement Assembly, from "370B2" to "37082"

MED FORM 16-OCT-03 1401-R-E

Click to insert figure sheet | Click to insert formatted continuation sheet | Click to insert unformatted continuation sheet

Corrosion Prevention Techniques

- **Past and Present Initiatives**
  - RockHard Coating
  - Av-Dec seals
  - Cor-Ban CPCs
  - Dual-Tape Connector Wrap
- **Future Initiatives**
  - Army-wide use of Tagnite for Mg components
  - Envelop Protective Covers
  - Laser cladding
  - Pre-manufacturing technologies
    - Advanced metals
    - Advanced composites
    - Advanced adhesives
    - Ect….



Conclusion

- CPCE enables early detection of emerging structural and corrosion issues
- ACE/CPCE data collection defines the impact of corrosion and aircraft stresses
- Analysis of ACE/CPCE data provides solutions that will continue to reduce the cost of maintenance and promote readiness

Welcome to the Aviation Engineering Directorate (AED)- Maintenance Engineering Division (MED) ACE/Corrosion Website

The site provides you ACE & Corrosion Prevention resources and a place for your comments & questions. Contact us @

DSN 861-4041

(361) 961-4041

or E-mail at: **corrosion@amrdec.army.mil**

Questions?